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Assessing the acceptance and functional value of the Asymmetrical Software Kit (ASK) at the tactical level

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THESIS

ASSESSING THE ACCEPTANCE AND FUNCTIONAL
VALUE OF THE ASYMMETRICAL SOFTWARE KIT
(ASK) AT THE TACTICAL LEVEL

by

Peter H. Hopewell

December 2007

Thesis Advisor: Douglas Borer
Second Reader: Richard Bergin

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13. ABSTRACT (maximum 200 words)

The Asymmetrical Software Kit (ASK) is a software package built for U.S Army Special Operations Command (USASOC). It is designed to greatly expand and digitize the Intelligence Preparation of the Battlefield (IPB) process for Special Forces units. The purpose of this Thesis is to thoroughly evaluate the Tactical user's acceptance of this technological innovation. Technology Acceptance Model, which psychometrically measures users' perceptions of ease-of-use and utility to predict their intention to use the software, was applied in this analysis. The test population for this user acceptance survey is the Tactical (Group and below) level user of the ASK. These are the Special Forces Intel Sergeants (18F's) on the Special Forces A-Teams (ODAs), and the Military Intelligence personnel at the Battalion and Group S2 (Staff Intelligence) sections. Respondents completed an anonymous, online survey on their impressions of the ASK. The questions were focused on system usability and user acceptance in a military setting. Overall, the models used in this study showed an acceptable level of fit with the Tactical end-user's usability and acceptance assessments and exhibited satisfactory explanatory power. Users showed marked trends in response to questions concerning training, command involvement, and system availability. Qualitative input included a number of responses about the idiosyncrasies of certain programs, and the lack of high speed computers to run complex GIS queries. The findings from this study should provide some valuable insights to Program Managers about systems evaluation, and clarify how USASOC can design full spectrum software fielding to foster technology acceptance and use at the Tactical level.

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ASSESSING THE ACCEPTANCE AND FUNCTIONAL VALUE OF THE ASYMMETRICAL SOFTWARE KIT (ASK) AT THE TACTICAL LEVEL

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requirements for the degree of

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ABSTRACT

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I.   INTRODUCTION

A.   BACKGROUND AND MOTIVATION

The Asymmetrical Software Kit (ASK) was designed using commercial off-the-shelf (COTS) software and hardware to aid the collection, processing, and dissemination of Military Intelligence in Army Special Operations units. The changing nature of warfare necessitated a newer, more agile analytic system to face newer, more agile foes. The Global War on Terror (GWOT) has highlighted the necessity for replacing legacy Intel systems like the All Source Analysis System (ASAS) and its younger sibling, the ASAS-Light. These systems, designed to operate in the Corps and Division Analysis and Control Elements (ACE), were left over from the Cold War. According to Army FM 34-25-3, the ASAS "is a "linchpin" system in forming a seamless intelligence architecture between and across echelons. They form a system that supports commanders from tactical through strategic levels anywhere across the range of military operations."[1]
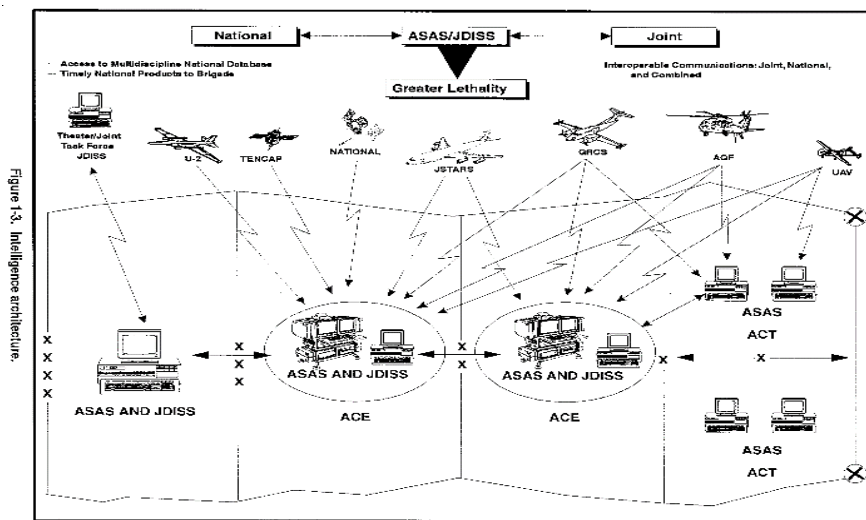
Figure 1.   Army Intel Architecture and ASAS

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[1] Army FM 34-25-3, "All-Source Analysis System And The Analysis And Control Element," 03 Oct 1995.

Engineered to process information on Warsaw Pact threats and push finished intelligence from Corps and Division analytic elements down to Brigade and below, they were wholly unsuited to the nature of the asymmetric and complicated threat encountered by Special Operations Forces in the GWOT. Most Intelligence requirements and procedures for SOF and conventional forces are the same. Yet, given the uniqueness of SOF missions and roles, there are characteristics of intelligence support that require unique systems and approaches. According to Army FM 3-05.102, Army Special Operations Forces Intelligence these are—

• *Level of detail.* The intricate planning and decentralized execution of SOF missions require intelligence support that is frequently more detailed or specific than that needed in conventional operations. ARSOF often require intelligence to avoid enemy forces, regardless of size or composition, as opposed to information that would allow conventional forces to directly engage the enemy.

• *Timeliness and accuracy of information.* Timely and accurate intelligence and unprocessed combat information can be a significant factor in operational success. Given the high risk factor or criticality of many ARSOF missions, uncertainty about the threat or environment reduces the chances for success more so than in the case of large-scale conventional operations. Equal with the need for accurate information is the need for timely information. Often the success of an ARSOF mission hinges upon having a key bit of knowledge at a specific time or event.

• *Operational element and analyst interface.* Given the sensitivity and critical need for very detailed information, especially in the context of DA operations, intelligence personnel often need to work directly with the forces that will execute a mission. Frequently both analysts and collectors will work hand in hand with operational planners and even with those executing the actual mission during planning, rehearsal, execution, and post-operational phases of a mission. Because ARSOF units often use forward staging bases, assigned intelligence personnel must be familiar with the conduct of split-based operations. This allows intelligence personnel to deploy forward

2

intelligence "packages" and to maintain connectivity with the Intelligence and Electronic Warfare (IEW) system through communications with their higher HQ.[2]

For SOF in an asymmetric fight, the legacy systems like ASAS failed because they are not able to meet the unique Intelligence needs critical to SOF mission success. The Asymmetrical Software Kit (ASK) was specifically commissioned to confront this change in the Military Intelligence paradigm that Army Special Operators were confronting in the GWOT.

To meet the needs of the Special Forces Intelligence Sergeant, or 18F on the Special Forced Operational Detachment Alpha (ODA), the ASK was originally developed by cobbling together 3 COTS software programs - Analyst's Notebook (ANB), Orion Magic (OM), and ArcGIS. These SOF peculiar Intelligence needs were calculated as being able to mine data (OM), analyze networks (ANB), and analyze and display data geospatially. In 2002, nothing existed in the military inventory. The Special Forces Intelligence Sergeant Course (SFISC) committee at the John F. Kennedy Special Warfare Center and School (SWCS) built their own package and insinuated it into the curriculum of the SFISC. The initial successes with the system and the analysis the 18F's performed as part of their capstone exercise in the course began to be showcased to visiting dignitaries and General Officers. The software package quickly became fast tracked for acquisition and purchase by United States Army Special Operations Command (USASOC). In 2004, fielding to individual Special Forces, Civil Affairs, and other SOF units began.[3]

Six years into the GWOT, and three years since the ASK's initial fielding, evidence from the battlefield suggests that ASK may not be all that it forecast to be. In light of this evidence and the resulting concerns, it is appropriate to evaluate the ASK software package by focusing on those US military personal who that have used in on the

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2 Army FM 3-05.102, "Army Special Operations Forces Intelligence," July 2001, pp. 2-5.

3 MSG Matt Ames and CW3 Hendry during 01 May 2007 interview with author at Ft. Bragg, NC.

battlefield. The most important question before us is simple. Is ASK really working for American soldiers, and can we measure and quantify this through perceived ease of use and perceived utility?

To date, most Information Technology (IT) research has concentrated on user acceptance factors in a business environment. In a market economy, there are a myriad of factors that encourage groups/ users to accept innovations. In a government economy, those factors differ greatly. According to Chau and Hu[4] and Lin[5], the proliferation of innovative technologies that support individuals performing highly specialized tasks (like Intelligence Analysis) in the government sector is one area that needs additional research into technology acceptance decision-making.

Investigations of technology usability and acceptance among tactical level (the soldiers on the pointy end of the spear) users have received precious little attention in previous research. In response, this project aims to examine user acceptance and usability of the ASK, across tactical Army SOF units. This study describes the design and implementation of a user-centric evaluation targeting system usability and user acceptance.

B   PROBLEM STATEMENT

The ASK, fielded at the cost of millions of dollars, was designed to seamlessly integrate intelligence up, down, and across the Tactical levels of command. Anecdotally, the system has had major problems with full adoption. Users routinely leave the software and hardware in the rear when they deploy, or, at best, only deploy and use certain pieces of the system in the capacity they were designed for, leaving many powerful tools unused.[6] Why?

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[4] Chau, P.Y.K. and Hu, P.J.-H. "Examining a model of information technology acceptance by individual professionals: An exploratory study," *Journal of Management Information Systems*, 18(4), 2002, pp. 191-229.

[5] Chienting Lin, *Examining Technology Usability and Acceptance in Digital Government: A Case Study in Law Enforcement*, Doctoral Dissertation, University of Arizona, 2004.

[6] These scenarios came to light during the authors experience as an Intelligence Officer at 3rd Special Forces Group from 2004-2006, and during numerous research interviews conducted at Ft. Bragg in May 2007.

C   RESEARCH QUESTIONS

Evidence suggests the Asymmetrical Software Kit is so complex, and the train-up is so daunting, that (as predicted by the Technology Acceptance Model), tactical users perceived utility, acceptance, and use of the system is low. If this is demonstrably true, how can we improve the software product to increase perceived value and ease of use thereby leading to a high level of user acceptance and use?

D   INVESTIGATIVE QUESTIONS

1. Is ASK being accepted and used by tactical level producers and consumers of intelligence in USASFC (as measured by their survey responses)?

2. With regards to ease of use, what, according to the tactical level users, are the problems endemic with the ASK? Do they relate to ease of use, social issues, or system availability?

3.   How can we increase user acceptance and use of these types of software systems??

    a.   What is the impact of increased training on user acceptance and use (18F Program of Instruction versus New Equipment Training)?

    b.   Are there other alternatives (COTS/GOTS software) that contain attributes that will increase perceived value and ease of use? What are those attributes independent of a particular alternative?

    c.   How can we better plan for and manage technology acquisition to increase acceptance and use?

E   RESEARCH FOCUS

There are many different types of collaborative intelligence software that is being used in both the private (financial analysis) and government (national intelligence agencies) sectors. The focus of this research will be a thorough analysis of the factors impacting user acceptance of a collaborative intelligence software suite currently fielded

by Army Special Operations units at the Tactical level. The results will be the statistical output derived from a proven theoretical model (Technology Acceptance Model) used to predict future usage of new Information Technology (IT) and specific user-input for improvements on the current and future systems the service will field.

F   METHODOLOGY

To answer the key research questions, a case study will be performed to identify specific factors that impact user acceptance and usage of the ASK. This case study will be based on a comprehensive literature review and interviews with tactical level users at Ft. Bragg, NC. These findings will be used to construct the survey instrument used during the case study. A thorough statistical analysis of the survey data and user suggestions will be used to make suggestions for improvements to the current system, and generate requirements for fielding of future systems.

G   SCOPE

The scope of this research effort will be to explore the numerous factors impacting acceptance and use of the Asymmetrical Software Kit among the tactical level users. To accomplish this, the research will review existing literature and studies to identify factors affecting participation in other forms of collaborative intelligence software. The goal of this will be to identify the key elements of gaining user "buy in" and participation in collaborative intelligence programs. The results will potentially be used to help modify and manage the existing intelligence systems, and assist in the design, implementation, and fielding of future software packages.

H   LIMITATIONS

The limitations of this research include the small sample population (+/-300) of ASK users at the tactical level in USASOC units. This is due to the nature of the case study itself. Outside factors have a limiting factor on respondents. USASOC units are currently heavily engaged in the GWOT, and are deployed across the globe, making

contact with an already small population even more difficult. In addition, this project is only studying the Asymmetrical Software Kit at the tactical level. As a result of this, the results of this study may not be applicable beyond the USASOC community or to IT acceptance theories in general.

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II. LITERATURE REVIEW

A. OVERVIEW

This thesis research attempts to identify the factors affecting user acceptance of the Asymmetrical Software Kit (ASK) based on the theories of the Technology Acceptance Model (TAM). The scope of this review represents the learned opinions of numerous experts and academics from different books and journals pertaining to technology acceptance and use of Information Technologies (IT). The information in this literature review will attempt to explain the components and function of the ASK as well as the pertinent factors that affect technology acceptance and adoption.

B. THE ASYMMETRICAL SOFTWARE KIT

The ASK consists of three COTS software components: ArcGIS, Analyst's Notebook, and Orion Magic. Each component serves as an integral piece of the Intelligence analysis that tactical users do on a continuous basis. The amount of data the average 18F takes in has increased exponentially in the information age. These software tools allow the SF Intelligence Sergeant and the Military Intelligence analysts he interacts with at the Special Forces Battalion and Group levels to quickly store, process, analyze, and visualize unprecedented amounts of information. The three components each work in their own way to facilitate this process.

Data collection and organization is the job of SRA Incorporated's Orion Magic (OM) software. OM is a "single framework for data collection, mining, and distribution. OM is a suite of tools developed to support investigative processes, from data collection to statistical analyses, to results visualization.[7] Users can logically organize incoming data in a hierarchical format of cabinets, outlines, and notecards to speed up subsequent data mining efforts. OM is also equipped with a powerful search engine to search the data analysts have organized. Their "Matrix Search" feature "is a series of vertical

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[7] Orion Magic website, http://www.orionmagic.com/overview.htm, accessed 19 September 2007.

column cells and horizontal row cells, each containing one or more keywords, (or concepts) that can be applied to the web, documents or databases and return results for not only each cell but also the intersection of those cells."[8]   Searching and displaying intersecting data in a format like this allows analysts to quickly visualize a few, significant intersecting data points in a mass of information.
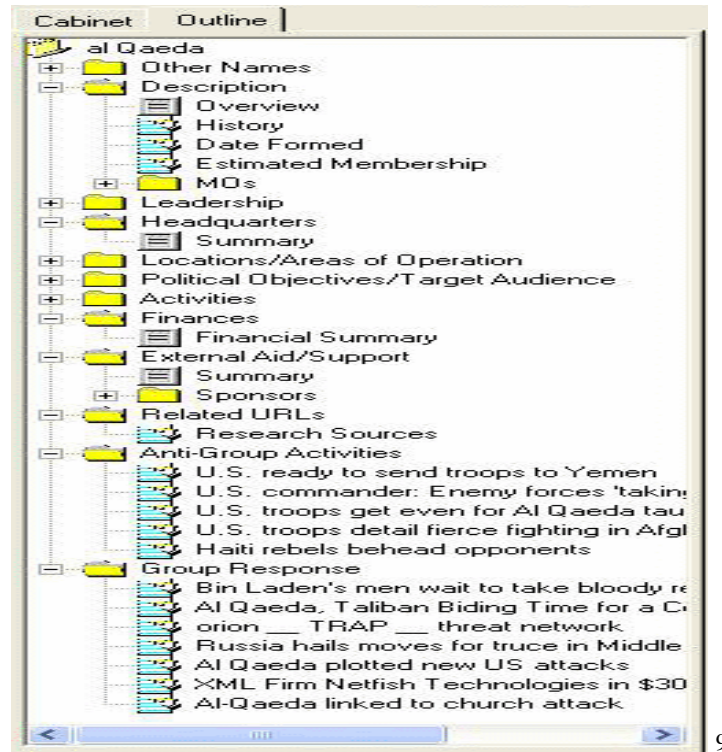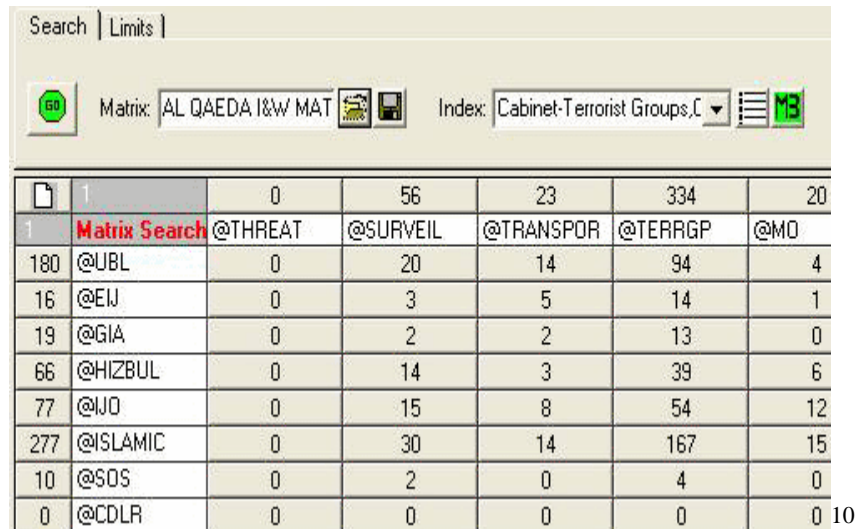
Figure 2.   File Cabinets and Outlines in Orion Magic

8 Orion Magic website, http://www.orionmagic.com/search.htm, accessed 19 September 2007.

9 Image downloaded from Orion Magic website, http://www.orionmagic.com/collect.htm, on 19 September 2007.

Search | Limits |

Matrix: AL QAEDA I&W MAT   Index: Cabinet-Terrorist Groups,C

		0	56	23	334	20
1	Matrix Search	@THREAT	@SURVEIL	@TRANSPOR	@TERRGP	@MO
180	@UBL	0	20	14	94	4
16	@EIJ	0	3	5	14	1
19	@GIA	0	2	2	13	0
66	@HIZBUL	0	14	3	39	6
77	@IJO	0	15	8	54	12
277	@ISLAMIC	0	30	14	167	15
10	@SOS	0	2	0	4	0
0	@CDLR	0	0	0	0	0

[10]

Figure 3.   Matrix Search results in OM

Geo-visualization and analysis of data is another critical task for the SF Intelligence Sergeant and the MI analysts that support him. This is accomplished using a Geospatial Information System (GIS). "A Geographic Information System (GIS) is a system for the management, analysis, and display of geographic information. Geographic information is represented by a series of geographic databases that model geography using simple, generic data structures." [11] GIS is also defined as "an integrated system of computer hardware, software, and trained personnel linking topographic, demographic, utility, facility, image and other resource data that is geographically referenced." [12]

ArcGIS is a product of ESRI, a leading software company in the GIS business. In the ASK, ArcGIS includes: ArcReader, which allows the user to view and query maps created with the other Arc products; ArcView, which allows users to view spatial data, create maps, and perform basic spatial analysis; ArcEditor which includes all the

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[10]Image downloaded from Orion Magic website, http://www.orionmagic.com/search.htm, on 19 Sep 2007.

[11] ESRI white paper, "What is ArcGIS?," 2004, accessed on 21 Aug 2007 at http://downloads.esri.com/support/documentation/ao_/698What_is_ArcGIS.pdf .

12 NASA – Langley GIS Research Team, definition found on NASA website 17 Sep 2007 at http://gis-www.larc.nasa.gov/qat/gisdefinition.html .

functionality of ArcView, includes more advanced tools for manipulation of shapefiles and geodatabases; or ArcInfo the most advanced version of ArcGIS, which includes added capabilities for data manipulation, editing, and analysis. To increase the functionality of ArcGIS, special Military "Extensions" have been created to accommodate military operational symbols, military grid referencing systems (MGRS) and digital terrain elevation data (DTED).[13]

Figure 4.   Data table in MS Excel format

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13 ESRI website, http://www.esri.com/software/arcgis/extensions/militaryanalyst/index.html. accessed 20 September 2007.
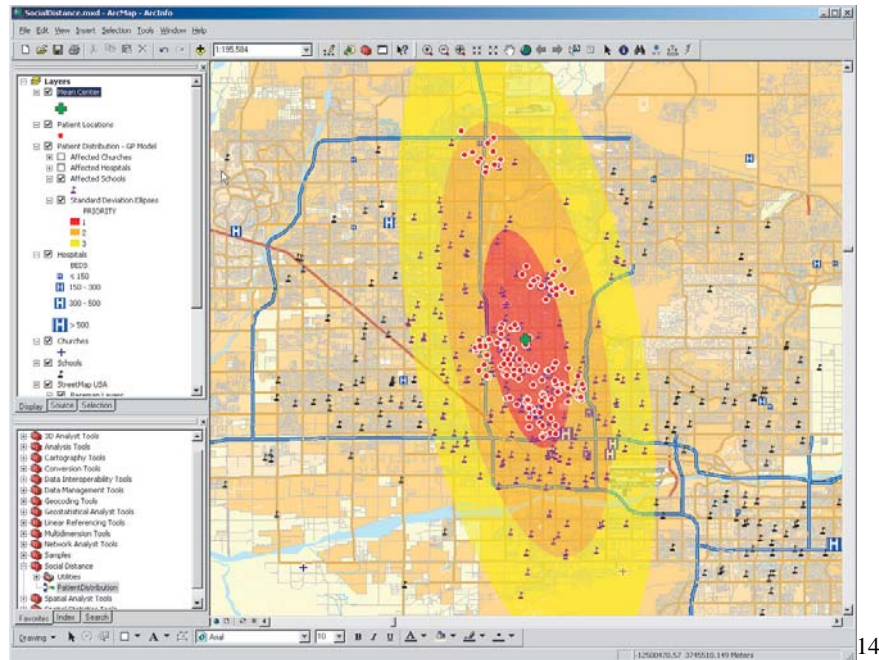
Figure 5.   Data graphically displayed and overlaid on mapping

Analyst's Notebook (ANB) is social network analysis software from the I2 Corporation. It allows analysts to process, analyze, and graphically display immense amounts of data on networks. The Analyst's Notebook also enables analysts to prepare and share link-analysis charts. Figure 6 shows a sample link analysis chart (finished intelligence) from ANB. SOF Intelligence analysts use ANB to identify links between known or suspected terrorists, their activities, phone numbers, locations, and their associations with other persons, events, or groups. With ANB, data trends and linkages can be visually displayed, interpreted, and subsequently analyzed.

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14 Images downloaded from ESRI Website, http://www.esri.com/software/arcgis/about/desktop_gis.html on 18 Sep 2007.
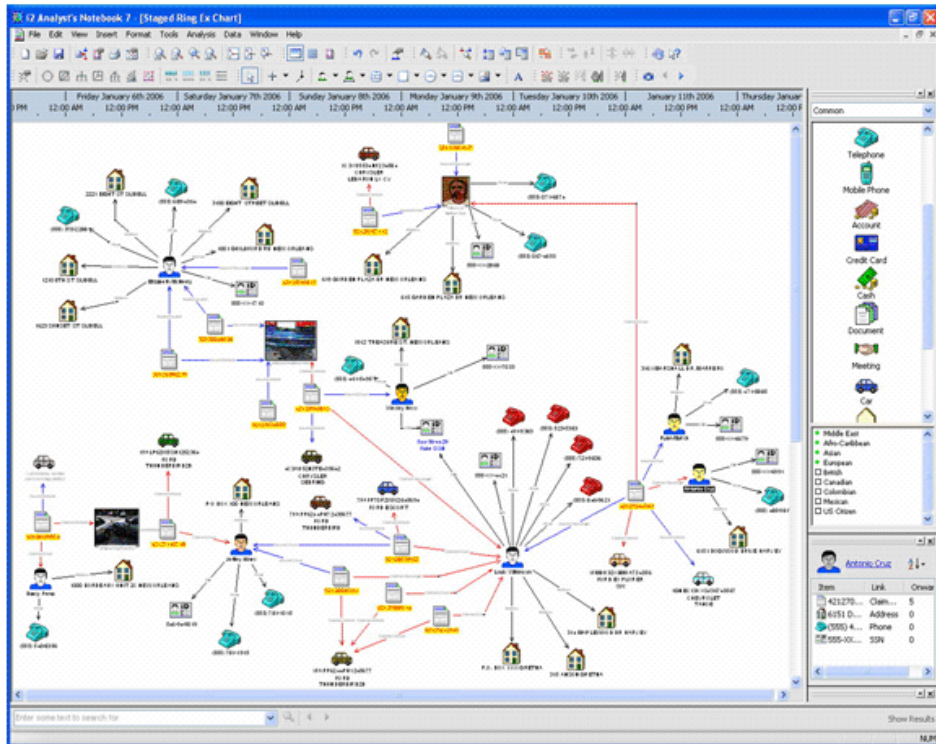
Figure 6.   Sample Link Analysis Chart

C.   TECHNOLOGY ACCEPTANCE THEORIES

In the following sections, the preeminent theories on technology acceptance and adoption will be reviewed. Classical Diffusion of Innovation (DOI) theory and the leading intention-based theories that provide theoretical underpinnings of this study will be the main focus.

D.   DIFFUSION OF INNOVATION

The model of "diffusion of innovation" was proposed by Everett Rogers in 1962. It was originally used by rural sociologists to study the diffusion of agricultural

technologies in social systems, but it has stood the test of time and been very successfully applied to information technology products.[16]

According to Rogers, innovation is "an idea, practice, or object perceived as new by an individual or other unit of adoption"[17] and diffusion is "the process by which an innovation is communicated through certain channels over time and among the members of a social system." [18] Rogers used well-established theories in sociology, psychology, and communications to develop a clear and succinct approach to explaining the diffusion of innovations.

The Innovation Adoption Curve
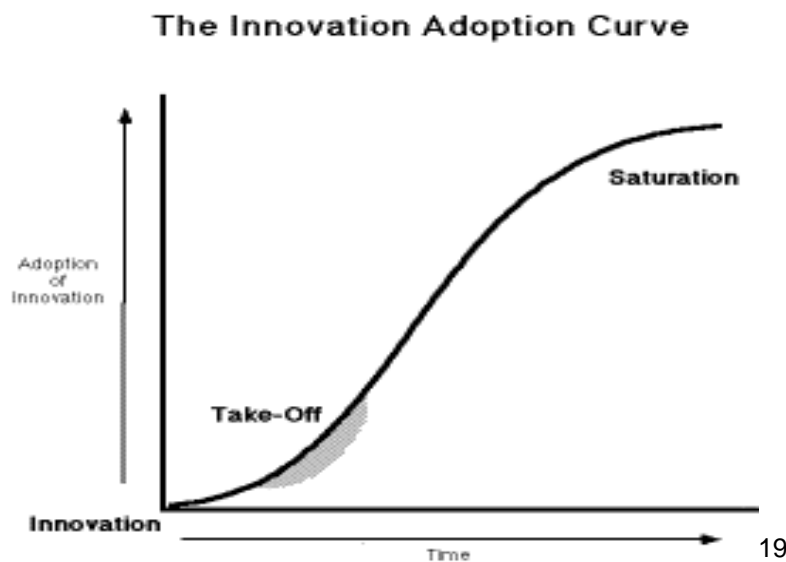
Figure 7.   Innovation Adoption Curve

After its conception, an innovation spreads slowly at first - usually through the campaigning of *change agents* - then picks up speed and visibility as more and more

[16] E. Mustonen-Ollila, & K. Lyytinen, (2003). Why Organizations Adopt Information System Process Innovations: A Longitudinal Study using Diffusion of Innovation Theory, Information Systems Journal, 13(3), pp. 275-297.

[17] Everett M. Rogers, Diffusion of Innovation, New York, Free Press, 2003, p. 12.

[18] Everett M. Rogers, Diffusion of Innovation, New York: Free Press, 2003, p. 35.

[19] Image downloaded from Tulane University website, http://www.payson.tulane.edu/research/E-DiffInnova/diff-prob.html accessed 14 September, 2007.

people are exposed to and adopt the innovation. Eventually it reaches a saturation level, where nearly everyone who is going to adopt the innovation, minus the hardcore luddites, has done so.

Individuals within a social system do not all adopt an innovation at the same time, but rather in an over-time sequence, so that individuals can be classified into adopter categories based on when they begin using an innovation. Socioeconomic and individual personality characteristics define the individual's role in the diffusion process. These adopter roles are: innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%), and laggards (16%).
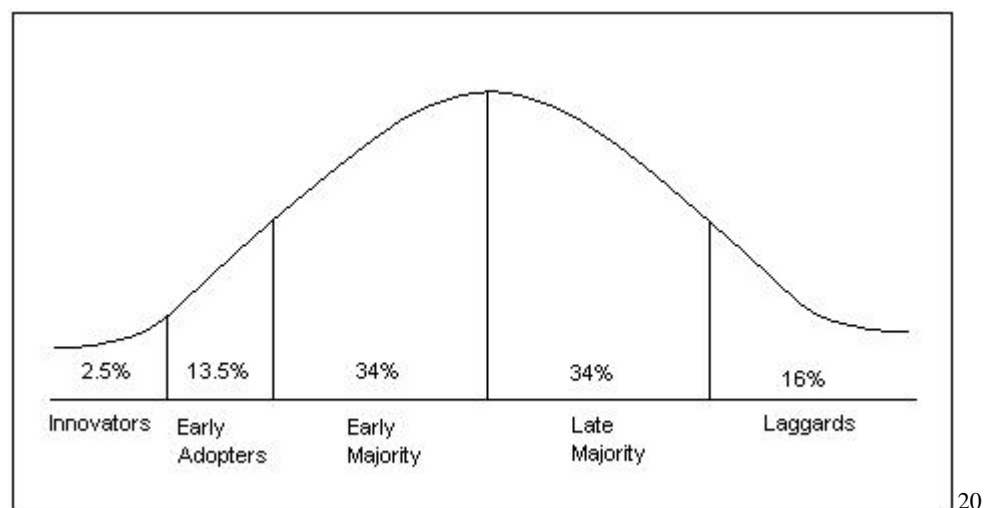
Figure 8.   Adopter Categorization on the Basis of Innovativeness

After the forward-thinking *change agents* have adopted the innovation, they work to communicate it to others in the society by whatever means they believe appropriate. When the number of early adopters reaches a "critical mass" - between 5 and 15% - the process becomes self-sustaining, as more and more people talk about or demonstrate the

[20]Everett M. Rogers, Diffusion of Innovation, New York, Free Press, 2003, pp. 280-281.

innovation to each other.[21]   Innovation diffusion theorists have identified five perceived attributes[22] that explain why some innovations reach this tipping point and others never do. They are:

Relative Advantage - Is the innovation better than the status quo? Will people *perceive* it as better? If not, the innovation will not spread quickly, if at all.

Compatibility - How does the innovation fit with people's past experiences and present needs? If it doesn't fit *both* well, it won't spread well. Does it require a change in existing values? If members of the culture feel as though they have to become very different people to adopt the innovation, they will be more resistant to it.

Complexity - How difficult is the innovation to understand and apply? The more difficult the innovation is to grasp, the slower the adoption process.

Trialability - Can potential adopters "try out" the innovation first, or must they commit to it all at once? If the latter, people will be far more cautious about adopting it.

Observability - How visible/tangible are the benefits of adoption? If people adopt it, can the difference be discerned by others? If not, the innovation will spread more slowly.[23]

E.   INTENTION-BASED ACCEPTANCE THEORY

Technology Acceptance Modeling (TAM) builds on Rogers' research on patterns of diffusion by providing a reliable method for predicting user behavior. Three models have evolved to successfully explain actual system use by measuring users' perceptions towards the innovation. These are the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and Technology Acceptance Model (TAM).

According to Fishbein and Ajzen's TRA, people's beliefs influence their attitudes, which together with subjective norms shape their behavior intentions. This then guides or dictates their actual behavior. In numerous studies, intention and actual behavior have

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[21] Everett M. Rogers, Diffusion of Innovation, New York, Free Press, 2003, p. 344.

[22] Perception of adopter is key in Technology Acceptance Model (TAM) discussed under intention-based theories. DOI is the antecedent to TAM.

[23] Everett M. Rogers, Diffusion of Innovation, New York, Free Press, 2003, p. 265-266.

been shown to be correlated highly. TRA has been applied scientifically to explain a wide variety of behaviors, including consumer purchasing[24], condom usage[25], and breast self-examination.[26]   TRA forms the basis for the Technology Acceptance Model ultimately selected for use in this study.
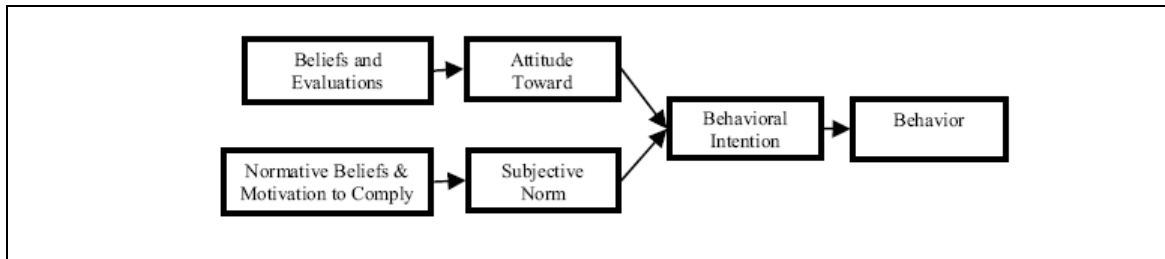
Figure 9.   Theory of Reasoned Action*27*

Icek Ajzen's Theory of Planned Behavior (TPB) posits that attitudes towards behavior and the subjective norm from TRA are insufficient to explain behavioral intentions. TBP introduces yet another factor, Perceived Behavioral Control (PBC) to the mix. PBC measures of the amount of control people *perceive* they have over their own behavior.   As a general rule, the more favorable the attitude toward behavior and subjective norm, and the greater the perceived behavioral control, the stronger the person's intention to perform the behavior in question should be.   Finally, given a sufficient degree of actual control over the behavior, people are expected to carry out their intentions when the opportunity arises. [28]

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[24]B. H. Sheppard., J. Hartwick, J.& P. R.Warshaw, The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research, Journal of Consumer Research, vol 15, 1988, p. 325.

[25] Y. Kashima, C Gallois, & M. McCamish, The theory of reasoned action and cooperative behaviour: it takes two to use a condom, British Journal of Social Psychology, 1993 Sep;32 (Pt 3): pp. 227-39 .

[26] L. M. Lierman, H. M. Young, D. Kasprzyk, & J. Q. Benoliel, Predicting breast self-examination using the theory of reasoned action, Nursing Research, 1990 Mar-Apr;39(2): pp. 97-101.

[27] Image downloaded from Your University website http://www.istheory.yorku.ca/theoryofreasonedaction.htm on 07 Dec 2007.

[28] I. Ajzen, Residual Effects of Past on Later Behavior: Habituation and Reasoned Action Perspectives. Personality and Social Psychology Review, 6(2), 2002, pp. 107–122.
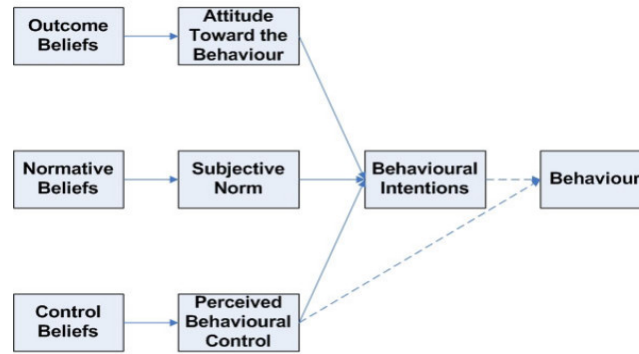
Figure 10.   Theory of Planned Behavior, from Environmental Health Journal.

        Fred Davis proposed Technology Acceptance Model (TAM) in 1989 as a logical extension of TRA and TPB.   TAM theorizes that the two main beliefs determining attitude and behavioral intention are *perceived usefulness* (PU) and *perceived ease of use* (PEOU).   USE is defined as the degree to which a user believes that the system he is adopting will enhance his or her performance. PEOU refers to the degree to which a user believes that using the new system will be free from physical and mental effort.[30]   The goal of TAM is to predict and explain user acceptance of Information Technology (IT) across a wide range of technologies, organizational contexts, and user populations. Given a choice between two systems, users will generally rate the system they find easier to use as having a higher PEOU score.   TAM has been used successfully in numerous studies. Davis, Bagozzi, and Warshaw were able to successfully predict usage of a word-processing program in a class of graduate students[31], and Dillon and Morris had similar results predicting usage of a web-browser among computer science students.[32]   The basic TAM model is depicted below.

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[29] Image downloaded from Environmental Health Journal at
http://www.ehjournal.net/content/4/1/23/figure/F1 on 28 Sep 2007.

[30]Fred Davis, Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 1989, pp. 319-340.

[31] Fred Davis, R. P.Bagozzi, & P. R. Warshaw, User Acceptance of Computer Technology: A Comparison of Two Theoretical Models, Management Science, 35(8), 1989, pp. 982-1003.

[32] A. Dillon & M. Morris, User Acceptance of Information Technology: Theories and Models, Annual Review of Information Science and Technology, 31, 1996, pp. 3-32.
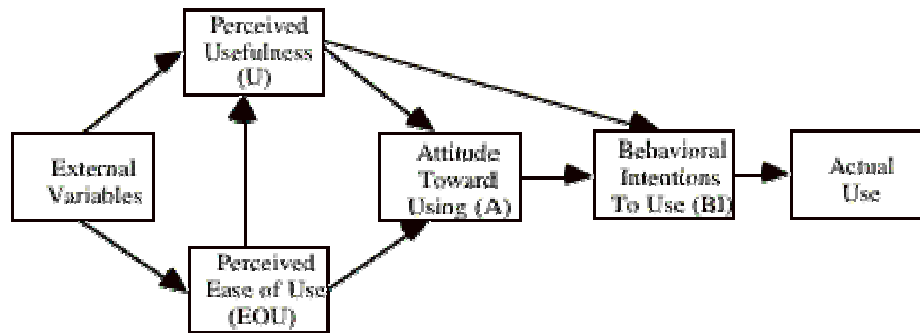
Figure 11.   Technology Acceptance Model

F.   EVALUATION METHOD SELECTION

After researching the three models presented (TRA, TPB, and TAM), it was determined that TAM would best be able to predict future usage of the ASK for three reasons: (1) TAM's legitimacy is firmly grounded in the literature of psycho-social sciences, (2) TAM was specifically developed to explain and predict user acceptance of technological innovations like the ASK, and (3) TAM's ability to predict system usage with a minimum amount of cost and difficulty are ideal for a study like this.

G.   THE RESEARCH MODEL

To date, only Chienting Lin, Paul Hu, and Hsinchun Chen have looked at usage of Intelligence and Security Informatics (ISI) systems (specifically the COPLINK system used by the Tucson PD) based on the Technology Acceptance Model.[34] The model for this study is drawn from that work, and is an attempt to further validate their findings in a similar (military versus police) environment.

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[33]M. Morris & A. Dillon, How User Perceptions Influence Software Use. IEEE Software, 14(4), 1997, pp. 58-65.·

[34] Paul Hu, Chienting Lin,.& H. Chen, User acceptance of Intelligence and Security Informatics technology: A study of COPLINK, Journal of the American Society for Information Science and Technology, 2005; 56(3) pp. 235-244.
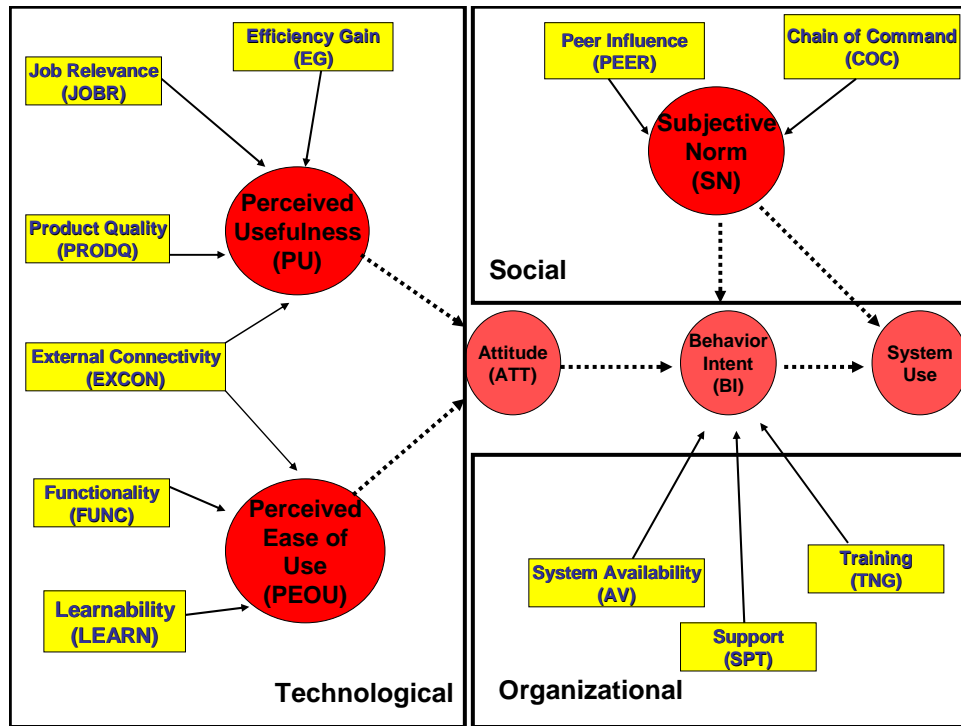
Figure 12.   Asymmetrical Software Kit User Acceptance Study Research Model

Research suggests that a user's decision to accept or refuse an ISI technology can be explained by factor pertaining to the technological, social, and organizational contexts. By examining these three factors, one can determine the roots of some of the barriers to adoption in a community of users.

The core principles of the technological context are perceived usefulness (PU), perceived ease of use (PEOU). For this study, PEOU and PU both determine attitude, and PEOU has a direct and positive effect on PU. Efficiency gain is an extremely important component in the Special Operations community: SOF peculiar intelligence requirements are, as previously noted in Chapter 1, *Level of Detail*, *Timeliness and accuracy of information, and Operational element and analyst interface.* Intelligence analysts at the tactical level continuously work against the clock to process, analyze, and disseminate intelligence from an ever increasing torrent of raw information. Accordingly, the following hypotheses are tested in this study.

Perceived Usefulness

H1:   The level of efficiency gain of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK.

H2: The level of job relevance of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK.

H3: The level of product quality of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK.

H4: The level of external data access of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK.

Perceived Ease of Use

H5: The level of external data connectivity of the ASK as perceived by the tactical users will positively affect their perceived ease of use of the ASK.

H6: The level of functionality of the ASK as perceived by the tactical users will positively affect their perceived ease of use of the ASK.

H7: The level of learnability of the ASK as perceived by the tactical users will positively affect their perceived ease of use of the ASK.

Through system exposure in training and daily job usage, users in the research population have developed personal assessments of, and attitudinal beliefs about the ASK. According to TAM and TPB, individuals embracing a positive attitude towards an innovation are more likely to accept that technology than those displaying a negative attitude. While others have questioned the effectiveness of attitude in mediating PEOU and PUs impact on Behavioral Intent[35], like Hu, Lin, and Chen, this study has elected to retain attitude because of the considerable autonomy afforded Military Intelligence analysts and SF Intelligence Sergeants.

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[35] Fred Davis, Richard Bagozzi, & P. Warshaw, User Acceptance of Computer Technology: A Comparison of Two Theoretical Models, Management Science, 35(8), 1989, pp. 982-1003.

In the Social context of this study, subjective norm refers to the user's assessment or perception of his significant referents' desires or opinions regarding his or her acceptance of the ASK. In the military, this is the user's peer group and his immediate chain of command. In the military, as in the law-enforcement community Lin studied, soldiers form psychological attachments to their unit and to the social system within it.[36] This attachment, in the military context, can be attributed to personal commitment to public service, the sense of community in military units, and the great amount to which soldiers depend on each other in an increasingly dangerous environment. In this study, we measured that by looking at Peer Influence (PEER). Given these factors, a military user is especially likely to consider the ASK useful and exhibit a strong intention to accept it when his fellow analysts and his leaders are in favor of adopting the innovation. Since there is a hierarchy in the profession, a military user is also likely to take into consideration the wants and needs of his supervisors. This is measured in the Chain of Command (COC) portion of the survey.

Subjective Norm

H8: The level of peer influence (PEER) as perceived by the tactical users will positively affect the intensity of their perceived subjective norm towards accepting the ASK.

H9: The level of command (COC) involvement as perceived by the tactical users will positively affect the intensity of their perceived subjective norm towards accepting the ASK.

System availability (AV), Training (TNG), and Support (SPT) are key components of the organizational context. System availability refers to the users perception of the availability of equipment necessary for accessing and using the ASK. Resource availability is a fundamental construct of perceived behavioral control, a component of Ajzen's TPB. In *Determinants of Perceived Use*, Venkatesh specifically notes the effect of availability of resources and opportunities on user acceptance.[37] In

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[36] Chienting Lin, Examining Technology Usability and Acceptance in Digital Government: A Case Study in Law Enforcement, University of Arizona, 2004, p.75.

[37] V. Venkatesh, Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model, Information Systems Research, 11(4), p. 342-365.·

addition to the previous research, the subjects of system speed, technical support, and computer availability were prevalent themes in pre-study interviews conducted with users at Ft. Bragg. There is also a large difference in the training that SOF and MI MOS soldiers receive on the system. In light of that information, the study tested the following hypotheses.

Behavioral Intent

H10: The level of system availability as perceived by the tactical users will positively affect the intensity of their behavioral intention towards accepting the ASK.

H11: The quality of training as perceived by the tactical users will positively affect the intensity of their behavioral intention towards accepting the ASK.

H12: The level of support as perceived by the tactical users will positively affect the intensity of their behavioral intention towards accepting the ASK.

III.   METHODOLOGY

A.   OVERVIEW

This chapter describes the overall methodology of this research project.   The design of the qualitative study will be covered in depth to illustrate the processes and procedures used to perform the case study in this research project.

B.   TAM IMPLEMENTATION

The following steps were derived from a comprehensive reading of previous research: (1) identify an appropriate study group, (2) develop /design the survey instrument, (3) gather data, (4) analyze the data, and (5) draw the appropriate conclusions. The following is a discussion of how these steps were implemented.

C.   IDENTIFY STUDY GROUP PARTICIPANTS

The population of the study consists entirely of Military Intelligence personnel, Special Forces Intelligence Sergeants, and Civil Affairs Soldiers assigned to United States Army Special Operations Command (USASOC). They represent several different Special Forces Groups, the JFK Special Warfare Center and School, the 96th Civil Affairs Brigade, and soldiers in various subordinate headquarters units. These soldiers all have experience with the Asymmetrical Software Kit, and use it, or components of it, in the course of their analyst duties. They represent a broad range of ages, experience, job training, and education.

D.   INSTRUMENT DEVELOPMENT

Multiple techniques were used during the instrument development phase. Candidate items for the survey were identified through previous research. The TAM

studies conducted on COPLINK by Lin, Hu and Chen[38] and previous research done by Lin[39] provided a readily validated survey instrument. The survey questions were drawn from this work, and then modified to reflect a change in communities (from police to military) and lexicons. After these changes, two Soldiers from the Ft. Bragg study group, and one Special Forces officer at the Naval Postgraduate School voluntarily assessed the validity of the resulting items at face value. From their input, a few minor changes were made to tailor the survey to the community. All question items (refer to Appendix B, survey questionnaire) were measured using a seven-point Likert scale. The possible response ranged from "strongly agree" to "strongly disagree." Multiple questions were used to measure single variables to compensate for how subjects respond to questions with certain word structures. To reduce the incidence of monotonous responses on the survey, the sequence of questions was randomized and half of the questions were negated.

E.   DATA COLLECTION

The study empirically tested the research model using data collected from a self-administered, online survey. The link to the website was distributed to over 350 participants through their chains of command. All subjects participated in the study voluntarily. The website with the survey was kept open for eight weeks, from 13 September 2007 to 12 November 2007 to allow as many subjects, given the current unit operational tempo and competing deployments, to reply as possible. Of the Soldiers that it was emailed to, 38 initiated the survey on the website. Of those 38 hits, 25 produced useable data.

The survey was designed to collect both qualitative and quantitative data. The constructs were measured using a seven point Likert Scale, with one as "Strongly

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[38] Paul Hu, Chienting Lin, & H. Chen, User acceptance of Intelligence and Security Informatics technology: A study of COPLINK, *Journal of the American Society for Information Science and Technology*, 2005; 56(3) p. 235-244.

[39] Chienting Lin, *Examining Technology Usability and Acceptance in Digital Government: A Case Study in Law Enforcement*, University of Arizona, 2004.

Disagree" and seven as "Strongly Agree." See Table 1 below for a sample question from the survey with the accompanying seven point Likert Scale below it. Multiple questions were used to measure single variables, allowing for variation in how individuals respond to varying word structures. The process of determining which sets of questions exhibit the smallest amount of variance for a particular variable is called Reliability Analysis. Reliability is calculated using a statistical procedure to measure Cronbach's Alpha.[40] Cronbach Alpha ranges between 0.0 and 1.0, and value of greater than 0.7 is considered sufficient for social research.

12. Using the ASK would improve my job performance						
Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement

Table 1.   Sample Survey Question[41]

In his initial research on TAM, Fred Davis performed this measure on each of his four variables, Perceived Utility (PU), Perceived Ease of Use (PEOU), Attitude (ATT) towards using, and Behavioral Intent to use (BI), to ascertain their reliability. His four measures of PU achieved a reliability score of 0.92, and PEOU achieved 0.90. The ATT scale and BI scale obtained reliability scores of 0.82 and 0.92 respectively.[42] The same analysis was repeated on the data gathered for this study to ensure reliability.

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[40]L. Cronbach, Coefficient alpha and the internal structure of tests. *Psychometrika, 16(3)*, 1951, pp. 297-334.

[41] V. Venkatesh and F. Davis, A Model of Antecedents of Perceived Ease of Use: Development and Test. Decision Sciences, 27(3) 1996, pp. 451-481.

[42] V. Venkatesh, and F. Davis, A Model of Antecedents of Perceived Ease of Use: Development and Test. Decision Sciences, 27(3) 1996, pp. 451-481.

In addition to the TAM constructs investigated by Davis, this study also investigates users perceptions of system Functionality (FUNC), available Tech Support (SPT), the importance of External Connectivity (EXCON), Efficiency Gain (EG) and the Training (TNG) they have received on the system. These questions were modeled after the studies on user acceptance of COPLINK conducted by Lin.[43]

To assess the qualitative aspect of the survey, three open ended questions were asked at the end of the survey. Respondents were elicited for their input on what part of the system worked well, what needed fixing, and their suggestions for future improvements. A sample of their input is included in Chapter IV.

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[43] Chienting Lin, *Examining Technology Usability and User Acceptance In Digital Government: A Case Study In Law Enforcement*, University of Arizona, 2004.

IV RESULTS AND ANALYSIS

A. OVERVIEW

This chapter presents the results of the research study in four distinct sections: Instrument Validation, Respondent Demographics, Qualitative Feedback, and Quantitative Analysis. The survey instrument was validated using Reliability Analysis. The subsequent sections examine respondent demographics; summarize some user-generated qualitative feedback about the system, and statistically analyze the survey data to find correlations to the model.

B. INSTRUMENT VALIDATION

Most of the items in this survey were drawn from previously validated measurements, but this study re-examines the instrument's convergent and discriminate validity. Using the responses from the survey, the instrument's convergent validity was examined using the Cronbach's alpha value for each of the specified constructs. Many social science professionals, as a rule of thumb, require a Cronbach's alpha reliability score of 0.70 or higher.[44] Cronbach's alpha is viewed as a measure of how well the sum score of the selected items capture the expected score for the larger domain, even if that domain is heterogeneous. The results of the reliability analysis are displayed in Table 3 below. The Cronbach's Alpha values ranged between .073 and .095, exhibiting more than adequate reliability.

To evaluate the instrument's discriminate validity, principal component analysis was performed using a varimax with rotation. Discriminate validity is satisfactory when items show low loading on other constructs. Each component showed an eigenvalue greater than 1.0, the standard threshold for factor analysis. Ideally, all the components would load on separate factors and achieve an eigenvalue greater than 1.0. This did not

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44 Wikipedia page on Cronbach's Alpha, http://en.wikipedia.org/wiki/Cronbach's_alpha, accessed June 18, 2007.

occur. However, the purpose of this research was to better understand the level of variance explained by variables impacting the Technological, Social, and Organizational constructs within the context of the TAM and as applied to the Asymmetrical Software Kit, as opposed to improving the model. When examining the variance explained by factors influencing PU and PEOU, both a sample size of 25 and higher than expected correlations between independent variables may be affecting the level of variance explained.

Linear regression in SPSS was used to examine the relationships within the Technological, Organizational, and Social constructs of the TAM The hypothesized relationships delineated in this model were shown, by examining Beta Coefficient and Significance, to explain a significant portion of the variance in all three constructs.

C.   RESPONDENT DEMOGRAPHICS

The overwhelming majority of our respondents (97%) were males, over the age of 30 and with 12 or more years of service in the Army. Most of these were senior Non-Commissioned Officers (NCO's) and Warrant Officers. They were split evenly between Military Intelligence (MI) and Special Forces Military Occupational Skills (MOS's). On a whole, they were very well educated, with 82.4% having some college, and 34.2% having a College or Postgraduate degree. They are familiar with computers and use them regularly: 94.4% used their personal computer at least once a day, and 97.3% used their work computers once a day or more. A full 65% of the respondents indicated they had a year or more of experience using the ASK. For system training, 39.4% received their training on the ASK from the 18F/ Special Forces Intelligence Sergeant Course (SFISC), a 12 week course at Ft. Bragg, NC. Of the remaining respondents, 7.9% indicated they had received the two-week course from the New Equipment Training Team. Fully 52.7% of the respondents had received either no formal training, or only received On the Job Training (OJT) from their fellow analysts or supervisors.

Most of the respondents interact with computers at work and at home on an almost daily basis. Their mean score for usage at home and work were 4.4 and 5.5

respectively. This indicates they use computers at home at least once a day, and use computers at work more than three to five times a day. Respondents were also asked to rank their usage of the components in the ASK (Orion Magic, Analyst Notebook, and ArcGIS). The table below displays their responses. A preponderance of the respondents used the software less than once a day. For Orion Magic and ArcGIS respectively, 64.8% and 52.6% rarely or never used the programs. The mean scores for component usage were low. ArcGIS and Analysts scored a mean reported usage of 2.8 each, which equates weekly usage. Orion Magic had a mean reported usage of 2.4, which is closer to monthly usage.

10. Current ASK Component Use							
	Never	About once a month	About once a week	About once or twice a day	Three to five times a day	More than five times a day	Response Count
Orion Magic	37.8% (14)	27.0% (10)	13.5% (5)	10.8% (4)	2.7% (1)	8.1% (3)	37
ArcGIS	26.3% (10)	26.3% (10)	10.5% (4)	21.1% (8)	7.9% (3)	7.9% (3)	38
Analyst's Notebook	21.6% (8)	24.3% (9)	16.2% (6)	27.0% (10)	5.4% (2)	5.4% (2)	37
						answered question	38
						skipped question	0

Figure 13.   ASK Component Usage

D.   QUALITATIVE FEEDBACK:

The survey contained three questions at the end requesting qualitative feedback on the ASK. The following are a sample of their responses to these questions. A complete listing can be found in Appendix C.

1. **"What features of the ASK do you like most? Why?"**

- ArcGIS - industry leader to allow for utilization of GIS information. We need software that allows us to conduct analysis of a digital COP. ANB - very versatile application for link analysis. GeoRover - Makes utilizing ArcGIS a WHOLE LOT easier and much more efficient.

- Orion Magic is a great help to researching local databases. ARCGIS has practical application in my job. Analyst Notebook helps to visualize intelligence reporting.

- Orion Magic is one of the best search tools I have worked with. The problem is access to all the databases

- I like ArcGIS for producing integrating data, performing analysis and producing shape files and databases; however, simpler more intuitive tools may be more useful for most common tasks related to spatial visualization (IE: Google Earth, etc). Allowing both spatial capabilities may bridge the gap between analysts and operators.

2. **"What features of the ASK do you like the least? Why?"**

- ArcGIS is not easy to use, and requires extensive training. ArcGIS only works with powerful computers which combat units do not have. Finally, no help is provided to the users.

- I detest Analyst Notebook because link charts become too crowded; charts cannot be easily searched for key words; and system does not allow for true social network analysis functions. I would recommend exploring and developing alternative link-analysis platforms.

- ARCmap has too many features and too many different ways to do the same thing. This makes the program bigger and harder to use. When my PC locks up I can loose hours of work.

3. "What suggestions do you have for future improvements to the ASK concept?"

- We need better computers, better training, and Imbedded support before and during deployments.

- Bn S3's, S2's, and Officers who will be commanders at BN and Group level need to be familiar with ASK so they can effectively work with Intel fusion. It is very disheartening to spend over 100 man hours doing a 130pg SODARS with photo's, link charts, and ARCmap products to have it locked in the safe by your S3 CW4 that you submit it too so it is never accessible/searchable/submitted to the portal, or useful to anyone.

- The concept of mapping people, places things and events across time and space is solid. However, the process requires re-design to ensure accessibility and acceptance. Recommend redesigning simple and intuitive data-centric systems based on technologies which present low barriers to entry and learning.

E. RESULTS OF QUANTITATIVE ANALYSIS

1. Previous Research

When Hu, Lin, and Chen ran their study on software acceptance in a Law Enforcement context, their findings suggested a "prominent core influence path from efficiency gain to perceived usefulness and then to intention to accept."[45] Lin also noted that "Perceived usefulness appears to be the single most acceptance driver for law enforcement officers, showing a highly prominent and significant direct effect on behavioral intention."[46] They also found the insignificance of perceived ease of use on perceived usefulness indicated a professional orientation amongst officers that had been

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[45] Paul Hu, Cjienting Lin, & H. Chen, User acceptance of Intelligence and Security Informatics technology: A study of COPLINK, *Journal of the American Society for Information Science and Technology*, 2005; 56(3) p. 242.

[46] Chienting Lin, *Examining Technology Usability and Acceptance in Digital Government: A Case Study in Law Enforcement*, University of Arizona, 2004, p. 88.

suggested by earlier research.[47] They also found subjective norm had a significant effect on acceptance decision-making, but that normative beliefs themselves did not lead directly to user acceptance.[48]

2   Results of this Study

In this study, Perceived Usefulness exists, along with Perceived Ease of Use in the Technological context. The mean value of Perceived Usefulness was 5.550, meaning users perceived the ASK to be somewhat useful software. The mean of Job Relevance was 5.140 and Product Quality was 5.190. Efficiency Gain (EG) was 4.933, indicating the respondents may perceive a net loss of efficiency if they have to spend an inordinate amount of time manipulating an overly cumbersome system. This theme was carried over in the qualitative responses and during the interviews at Ft. Bragg.   Using linear regression, a coefficient of determination (R^2) and a regression coefficient (Beta) were determined for the model. For Perceived Usefulness, the adjusted R^2 value was .716. Job Relevance and Product Quality were the most important factors. Efficiency Gain only had a small effect on Perceived Usefulness, and External Connectivity had little to no bearing on Perceived Usefulness.

These results show that Hypotheses Two (The level of job relevance of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK) and Three (The level of product quality of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK.) were shown to be valid. Hypothesis One: (The level of efficiency gain of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK.) and Hypothesis 4: The level of external data connectivity of the ASK as perceived by the tactical users will positively affect their perceived usefulness of the ASK.) were found

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[47] M. S. Larson, *The Rise of Professionalism: A Sociological Analysis*, Berkley, CA, University of California Press, 1977.

[48] Chienting Lin, *Examining Technology Usability and Acceptance in Digital Government: A Case Study in Law Enforcement*, University of Arizona, 2004, p. 89.

not to correlate as strongly. Statistically, Job Relevance and Product Quality are the two strongest determinants of Perceived Usefulness.

Construct	Item	Mean	STD	Cronbach's á
Perceived Utility (PU)	PU-1	5.480	1.610	0.958
	PU-2	5.600	1.154	
	PU-3	5.560	1.325	
	PU-4	5.560	1.416	
Efficiency Gain (EG)	EG-1	4.880	1.301	0.801
	EG-2	5.040	1.513	
	EG-3	4.880	1.452	
Job Relevance (JOBR)	JOBR-1	4.920	1.497	0.821
	JOBR-2	5.200	1.554	
	JOBR-3	4.880	1.536	
	JOBR-4	5.560	1.157	
Product Quality (PRODQ)	PRODQ-1	5.720	1.137	0.821
	PRODQ-2	5.240	1.588	
	PRODQ-3	4.400	1.755	
	PRODQ-4	5.400	1.527	

Table 2.   Reliability Analysis for Perceived Usefulness

The mean score for Perceived Ease of Use was 4.690. The system is not perceived to be more than moderately easy to use. For Functionality and Learn ability, the mean scores 4.246 and 4.680 respectively. This indicates users found the ASK moderately functional in its layout, and rated their prospect of learning how to use the system at somewhat better than average. Of the factors bearing on Perceived Ease of Use, Functionality and Learn ability were the most important determinants of Perceived Ease of Use, Functionality correlated to Perceived Ease of Use at .841 and Learn ability correlated at .680.

Hypotheses Six (The level of functionality of the ASK as perceived by the tactical users will positively affect their perceived ease of use of the ASK.) and Seven (The level of learn ability of the ASK as perceived by the tactical users will positively affect their perceived ease of use of the ASK.) were proven to have a statistically significant correlation. They are the strongest determinants of Perceived Ease of Use. Hypothesis Five (The level of external data connectivity of the ASK as perceived by the tactical users will positively affect their perceived ease of use of the ASK.) was again proven to be

uncorrelated to both factors in the Technological Construct. External Connectivity, while important to users, has no bearing on either Perceived Usefulness or Perceived Ease of Use.

Construct	Item	Mean	STD	Cronbach's á
Perceived Ease of Use (PEOU)	PEOU-1	4.080	1.552	0.875
	PEOU-2	4.880	1.394	
	PEOU-3	4.800	1.471	
	PEOU-4	5.000	1.384	
Functionality (FUNC)	FUNC-1	4.480	1.636	0.905
	FUNC-2	4.320	1.700	
	FUNC-3	4.360	1.680	
	FUNC-4	3.880	1.763	
Learn ability (LEARN)	LEARN-1	4.760	1.640	0.739
	LEARN-2	4.720	1.882	
	LEARN-3	4.800	1.290	
	LEARN-4	4.440	1.709	
External Connectivity (EXCON)	EXCON-1	5.320	2.267	0.759
	EXCON-2	5.680	1.651	
	EXCON-3	5.720	2.051	
	EXCON-4	5.360	2.215	

Table 3.   Reliability Analysis for Perceived Ease of Use
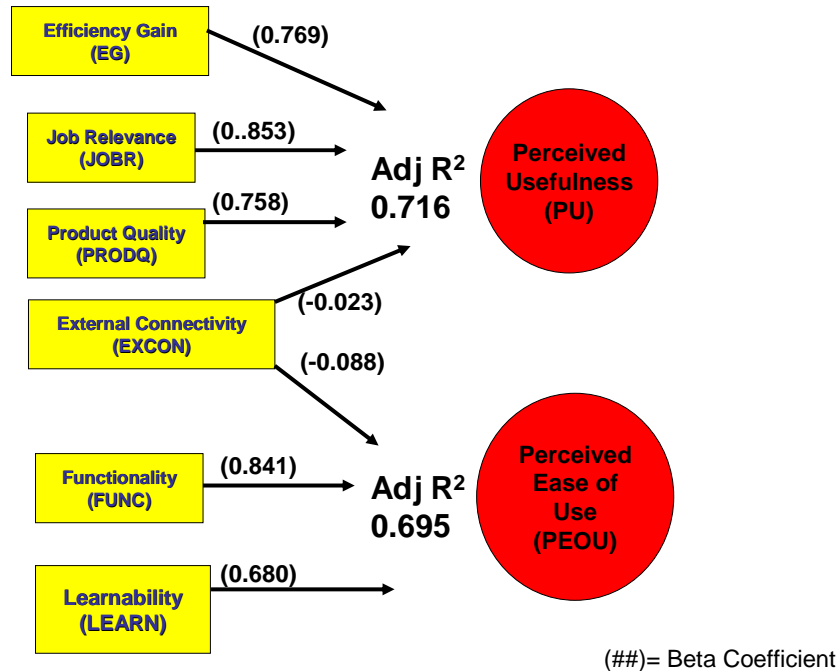

Figure 14.   Technological Construct Regression Values

The mean of Subjective Norm was 4.400, indicating an overall moderate to weak influence of peers and leaders in influencing adoption behavior. Peer Influence mean was 4.733, and Chain of Command influence mean was 5.040. Users are influenced by their peers to a moderate extent, but not by their Chain of Command. Peer Influence correlates to Subjective Norm at .592, but Chain of Command influence correlates at -.004. Tactical level SOF users are trained to work in small groups and rely on each for their survival. It is not surprising that soldiers trained to this extent would hold the opinions of their peers in higher regard than the opinions of their supervisors. It is very likely that command influence in a SOF unit is not as important a driver in a SOF unit as it would be in a conventional Army unit, but this bears further research.

Hypothesis Eight (The level of peer influence (PEER) as perceived by the tactical users will positively affect the intensity of their perceived subjective norm towards accepting the ASK.) proved a statistically significant correlation. Conversely, Hypothesis Nine (The level of command (COC) involvement as perceived by the tactical users will positively affect the intensity of their perceived subjective norm towards accepting the ASK.) correlated negatively. This may, as mentioned earlier, be a function of the way in which Special Operations Soldiers are trained to operate in small, self sufficient units far from the direct command and control exercised by many conventional military commands.

Construct	Item	Mean	STD	Cronbach's á
Subjective Norm (SN)	SN-1	5.280	1.369	0.733
	SN-2	5.320	1.405	
Chain of Command (COC)	COC-1	5.320	1.405	0.741
	COC-2	5.360	1.150	
	COC-3	5.400	1.554	
	COC-4	5.280	1.458	
Peer (PEER)	PEER-1	5.400	1.290	0.363
	PEER-2	4.920	1.605	
	PEER-3	3.880	1.877	

Table 4.   Reliability Analysis for Subjective Norm

Peer Influence (PEER) → (0.592) → Adj R² 0.322 → Subjective Norm (SN)

Chain of Command (COC) → (-0.004)
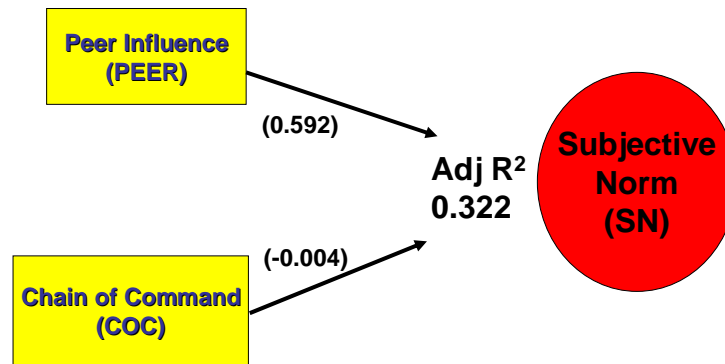
(##)= Beta Coefficient

Figure 15. Social Construct Regression Values

In the Organizational construct, respondents displayed a Behavioral Intent to use mean of 5.346. This indicates a slightly positive intent to use the system. Support had a mean score of 4.040, indicating a neutral opinion of the support mechanisms for the software. Training also scored a mean of 4.550, which is neutral. However, when you reanalyze the data, SOF MOS soldiers scored a mean of 4.43 for Training, while MI MOS soldiers scored a mean of 4.64. This demonstrates a slight disparity in the perception of the training soldiers receive. System Availability scored in the negative region, with a mean of 3.160. Soldiers clearly thought system availability and finding enough computers appropriate to run the software were problem facing their acceptance of the system. These concerns were born out in the qualitative feedback from the survey. For Behavioral Intent, Training and Support were the most important factors. Training correlated to Behavioral Intent at .498, and Support correlated at .310. The adjusted R-squared value for the regression analysis of the Organizational construct was .215. These

low scores predict a likelihood of marginal ASK use by the respondents. This is born out in the usage data and the comments from the qualitative data.

Hypothesis Ten (The level of system availability as perceived by the tactical users will positively affect the intensity of their behavioral intention towards accepting the ASK.) did not correlate strongly, although respondents did express much concern over the systems. Hypotheses Eleven (The quality of training as perceived by the tactical users will positively affect the intensity of their behavioral intention towards accepting the ASK.) and Twelve (The level of support as perceived by the tactical users will positively affect the intensity of their behavioral intention towards accepting the ASK.) proved the strongest correlations with Behavioral Intent. Training and Support, in that order, were the most important determinants.

Construct	Item	Mean	STD	Cronbach's á
Availability (AV)	AV-1	2.800	1.527	0.786
	AV-2	3.480	1.782	
	AV-3	3.000	1.607	
	AV-4	3.360	1.468	
Support (SPT)	SPT-1	4.040	2.051	0.864
	SPT-2	4.120	1.943	
	SPT-3	3.960	1.881	
Training (TNG)	TNG-1	4.480	1.837	0.753
	TNG-2	4.280	1.744	
	TNG-3	5.240	1.200	
	TNG-4	4.200	1.658	

Table 5.   Reliability Analysis for Behavioral Intent

System Availability
(AV)

(0.104)

Support
(SPT)

(0.310)

Adj R² Behavior
0.215 Intent
(BI)

(0.498)

Training
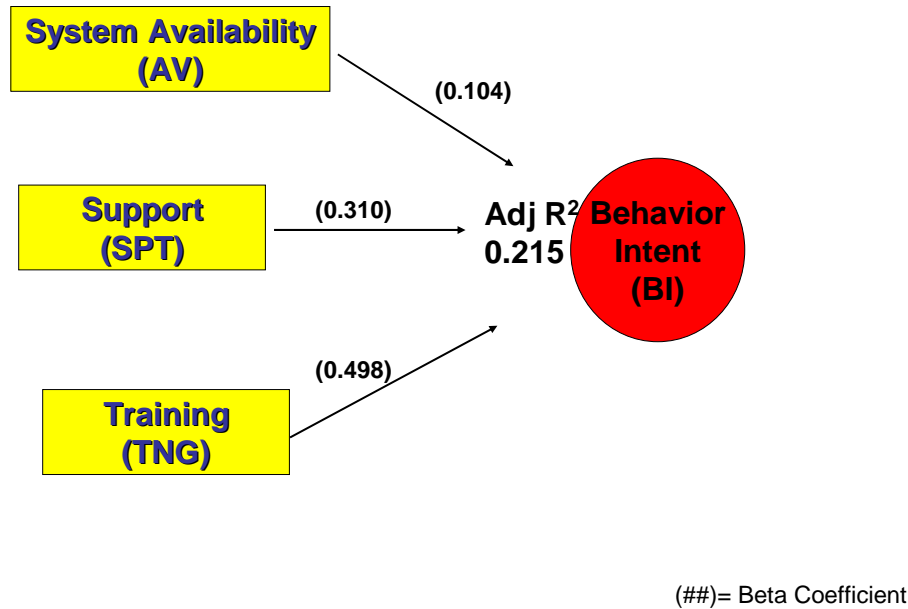(TNG)

(##)= Beta Coefficient

Figure 16.   Organizational Construct Regression Values

F   CONCLUSIONS AND DISCUSSION

Findings from this analysis have several implications for research and technology fielding practices in the military context.   The analysis suggests that Perceived Usefulness appears to be the most important acceptance driver for users at the Tactical level.   Job Relevance and Product Quality were the two most significant drivers of Perceived Usefulness, suggesting that users may anchor their acceptance decision from a utility perspective.   This was very similar to findings with law-enforcement officers and the COPLINK software.[49]

Second, Peer Influence seem to be the strongest driver of Subjective Norm. When assessing the utility of the ASK, Soldiers are likely to take into account the opinions of many people.   What is significant here is that the Chain of Command held

[49] Chienting Lin, *Examining Technology Usability and Acceptance in Digital Government: A Case Study in Law Enforcement*, University of Arizona, 2004, p. 88.

almost no sway in a soldier's decision. This may be due to the command's lack of involvement with, or knowledge about the ASK.

Finally, while System Availability is perceived as a problem among the respondents, it is not a significant driver of Behavioral Intent to use. Respondents had a lot to say about the availability and appropriateness of their computers in both pre-survey interviews at Ft. Bragg and in the qualitative portion of the survey itself. Training and technical Support for the ASK are, however, significant aspects. As noted before, there is a difference in perceptions of training amongst the respondents, and it's split along MOS lines. Respondents also mentioned a perceived lack of dedicated tech support for the system, which hampered their efforts at proficiency during pre-mission train up cycles.

Design and use of collaborative Intelligence analysis software like the ASK can greatly enhance the war fighting capabilities of SOF units. Any unit adopting new technology must carefully manage that process to reap the full benefit of the innovation. Driven by a need to explore technology acceptance by Tactical level users, this study designed and empirically tested a model for explaining individual users acceptance of the ASK. Overall, the model showed a good fit with the survey data collected, and it exhibited satisfactory explanatory power to most of the acceptance decisions observed. These findings will help instructors, software designers, and leaders design systems and fielding plans that foster, rather than stifle technology acceptance by Tactical users.

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V. RECOMMENDATIONS AND CONCLUSIONS

A. OVERVIEW

From the beginning, the purpose of this research has been to identify those factors relating to user acceptance of the Asymmetrical Software Kit (ASK). This chapter will summarize the research, examine the implications of significant findings, and identify opportunities for continued research in this field. The Technology Acceptance Model (TAM) results for this study are summarized, and some implications for further TAM usage are delineated. Finally, based off all the analysis, recommendations are given for continued training, fielding, and evolution of the ASK and the systems that will succeed it.

With a better understanding of the key drivers of user acceptance for the tactical-level user, leaders, trainers, and procurement/futures professionals can quickly identify areas where user acceptance is currently being hindered, and likely to be hindered in the future. They can then plan acquisition, information, and training programs to erode these barriers and ensure a swift, smooth fielding and adoption. User training should concentrate on increasing Perceived Utility, as this is demonstrably the most important acceptance driver for ASK users. A utility centric view of technology is consistent with the findings of other research, and explains the insignificant effect of ease of use on Behavioral intent[50]. It follows that users would not find an innovation useful simply because it is easy to use. Cultivating both peer and Chain of Command support for the new technology can create a normative reinforcement that encourages user acceptance as well. While this may not lead directly to acceptance, it can influence an individual analyst's assessment of an innovation's usefulness.

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[50] Chienting Lin, Paul Hu, H. Chen, & J. Schroeder, Technology Implementation Management in Law Enforcement: COPLINK System Usability and User Acceptance Evaluations, Social Science Computer Review, Vol. 22, No. 1, 2004, p. 27.·

B   RECOMMENDATIONS

The intention of this research has been to use the findings to aid in the modification and management of the current Asymmetrical Software Kit, as well as the design and implementation of future software packages of this nature.

1   System Training (TNG):

Training, according to the results of the survey, is the number one discriminator for intent to use (BI). Military Intelligence (MI) soldiers who received their training through the Mobile Training Team or On the Job Training displayed a lower intent to use, a lower PEOU, a lower PU, and had a much lower perception of the value of the training they received on the system. This stands in stark contrast to the Special Forces Soldiers (MOS 18F and 180A), most of whom received their training through the Special Forces Intelligence Sergeants Course (SFISC). Their responses were the antithesis of the responses from MI soldiers. While both of them must use the system to communicate and share intelligence at the Tactical level, they do not receive the same training. The SFISC is a 12 week course that uses the ASK the entire time. The POI focuses on using the system in all aspects of the 18F's job, and leads to a capstone project.[51] The capstone is a culmination of their instruction on the ASK. Teams analyze immense amounts of real-world intelligence data and draw conclusions about active military conflicts. Some of these projects have discovered groundbreaking information and assisted the GWOT greatly.

The disparity between the training the 18F's receive in the SFISC and the training the MI soldiers receive is alarming, and may be the single largest driver in the disparity between their perceptions of the system and the adoption rates of the ASK. The disparity doesn't have to exist, and much of that could be solved through similar, consistent, and cooperative training on the system. The current SFISC proposal to fix this problem is to have contractors teach their POI to MI soldiers and replicate the 18F course at another

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[51] SFISC 18F Program of Instruction (POI) given to the author during interviews at Ft. Bragg, NC.

location. On the MI side of the house, the USASOC G2 has a project in concept stages called the ARSOF Military Intelligence Assignment Oriented Training (AOT) Initiative. This AOT is designed to provide incoming MI soldiers an in-depth training package to prepare them for the unique demands of the Army SOF environment.[52]

The recommendation of this author is that the proposals be combined. The SFISC would change to the Special Forces Intelligence Course, or SFIC. This training would include all MI MOS's with the 18F's to standardize unify the training they receive on the ASK. It is, after all, the system designed to help them analyze and communicate Tactical intelligence. USASOC trains communications equipment in a collaborative environment. Signal soldiers sit in the same classroom as the Special Forces Communication Sergeants (18E's) and work together to establish communications. I would only be natural that the Special Forces Intelligence Sergeants should attend the same training as the Military Intelligence Soldiers that support them. The POI for the MI Soldiers could cover the new and unique expectations they will face, and the courses on the ASK could be a combined effort. MI soldiers and the 18F's could collaborate on the capstone project, and use the ASK to piece together real world intelligence from ongoing conflicts and produce realistic products as they would do in combat. This would serve many ends. They MI and Special Forces MOS Soldiers would train together on the system they use on a daily basis to build their confidence in the system. Their collaboration would also boost their confidence in each others abilities, and promote trust in the soldiers they will have to work with on a daily basis. The relationships forged in these joint training environments are proven to be very strong bonds.

2   Command Influence – Subjective Norm (SN):

In "Best Practices in Counterinsurgency," Kalev Sepp wrote that, "Intelligence operations that help detect terrorist insurgents for arrest and prosecution are the single most important practice to protect a population from threats to its security."[53] This is a

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[52] Emails and conversations with LTC Battle, USASOC deputy G-2 and SGM Coffman, USASOC G2 SGM about the AOT initiative.

[53] Kalev Sepp, Best Practices in Counterinsurgency, Military Review, May-June 2005, pp. 8-12.

change in the norm for many classically trained Intelligence professionals. According to Les Grau, a respected Counter-Insurgency theorist, Intelligence necessary for fighting insurgents is a radical shift, and a lot of change to swallow. "The military intelligence effort devoted to combating…insurgency has little in common with conventional intelligence operations in support of conventional maneuver war. Intelligence preparation of the battlefield, order of battle, templating forces, signals intelligence; measurement and signature intelligence; and electronic intelligence take different forms or are not applicable. The S2 or G2 has a different type of war and needs to take a different approach to dealing with it, much as the U.S. approach to peacekeeping evolved during the past decade."[54]   Any change this large demands command involvement at a level even more than would be normally necessary to simply shepherd an innovation. This change isn't just about a new system, it's about a whole new way of analyzing Intelligence.

When infusing a new innovation into an organization, military units need to plan and execute software fielding like a corporation. The current fielding model often ends at the purchase of software, neglecting several key steps to gain user buy-in. According to John P. Kotter, organizational transformations, including adoption of new software, can be fraught with peril. He studied eight factors that controlled success or failure of adaptation: Not enough sense of urgency, Not Creating a Powerful Enough Coalition, Lacking a Vision, Under communicating the Vision by a Factor of Ten, Not Removing Obstacles to the Vision, Not Systematically Planning for and Creating Short-Term Wins, Declaring Victory Too Soon, and Not Anchoring Changes in the Organization's Culture.[55]   This data has shown that Chain of Command as having no correlation whatsoever to users acceptance decisions. It is obvious in this instance that the Chains of Command have under-communicated their vision, declared victory after fielding, and not institutionalized (anchored) this innovation in their organizational culture.

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[54] Lester Grau, Something Old, Something New: Guerrillas, Terrorists, and Intelligence Analysis, Military Review, July-August 2004, accessed on 10 December 2007 from Small Wars Journal website at http://www.smallwarsjournal.com/documents/grau.pdf.

[55] John P. Kotter, "Leading Change: Why Transformation Efforts Fail," Harvard Business Review, March-April 1995, pp. 59-67.

The results of measuring the Subjective Norm (SN) in this study show that leadership in USASOC is not a strong influence in Soldiers decisions to adopt the ASK. Peers, immediate supervisors, and the entire Chain of Command should be very important social influences on an operator, but they are not involved enough in this transformation of Intelligence. Educating the leadership about the benefits of the ASK, and helping them understand the importance of using the system is paramount. The Chain of Command must also mandate usage across the board, and remove old systems to assist in adoption. Hartwick and Barki found that mandatory usage was significantly related to Intention to Use. Mandatory users give greater weight to the opinions of others, using the system more frequently when their leadership thinks that usage is appropriate.[56] In a military environment, a change like this should be simple enough. The chain of command can mandate usage of the ASK and have the legacy systems removed from the computers. In fact, many of the survey respondents and soldiers interviewed at Ft. Bragg admitted they still used Falconview, an older and simpler GIS, because their peers still used it and the Chain of Command tacitly supported this choice. Wilson stated that "Tasks that are familiar, easy, professionally rewarded, or well adapted to the circumstances in which the operators find themselves will be preferred because performing them is less costly than undertaking tasks that are new, difficult, or professionally unrewarded or that place the operator in conflict with his or her own environment."[57] By demanding the Soldiers produce their Intelligence products with the ASK and removing competing systems like Falconview, commanders can greatly affect adoption rates in their units. These changes have to be swift and visible to all users, lest users continue to ignore the innovations around them.

One of the suggestions brought out in the interviews was for the commanders to institute a weekly briefing. It was suggested that the program be called "Fox Friday" (for the 18 F Intel Sergeant MOS), and that the 18F's and the MI Soldiers of the S2 (Intel)

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[56] J. Hartwick and H. Barki, Examining the Role of User Participation in Information System Use, *Management Science*, Vol 40, (4), April 1994, pp. 440-465.

[57] J. Wilson, Bureaucracy: What Government Agencies Do and Why They Do It, New York, Basic Books, 1989, p. 231.

collaborate on a weekly briefing to the entire Battalion Chain of Command. A routine like this will do several things. First, it will demonstrate command knowledge of the system, and expectations of system use. Second, a program like this will go a long ways towards positively anchoring system usage in the culture of the unit and ensuring that new users are brought into the fold as they enter the unit. Having the SOF and MI MOS soldiers collaborate in a weekly preparation and briefing will cause them to work together towards a common goal, and strengthen trust and working relationships to stand the stresses of combat.

3   System Availability (AV):

The mean score for questions of system availability belied an overall negative impression of the number and type of systems available to run the software. Many of the respondents to the survey noted that there were concerns with both system availability, and system suitability. Soldiers expressed concerns that the number of systems their units were issued were insufficient to cover each and every user, and that many of the systems the ASK was loaded on were not fast enough to run complex, memory intensive programs like ArcGIS.

During interviews at Ft. Bragg, one Warrant Officer admitted that he had upgrade the laptop by purchasing enough RAM and a fast enough processor for his 18F to use the system. His detachment CF-50 (Panasonic Toughbook Laptop) was two years old, had survived three rotations to Southern Afghanistan and was no longer performing at the level necessary to run memory intensive programs like ArcGIS without crashing. Another senior NCO noted that, during the SFISC, the computers they use are state of the art desktops maintained in a lab environment. They are hard-wired together and pull data and imagery off a dedicated server. Once he returned to his unit, his ASK laptop could not match the performance of the computers in the lab, and that he was greatly frustrated by this. One respondent even suggested using a COTS gaming computer like an Alienware™, with an extremely fast processor and extra RAM to run ArcGIS.

Issues like these have serious impacts on user acceptance, and can be easily remedied by updating Basis of Issue to reflect real needs, proper acquisition (with end user input) and property accountability.

C.   CONCURRENT RESEARCH:

This project is only the first in a series being executed by the Naval Postgraduate School's Common Operational Research Environment (CORE) Lab to investigate further improvements that might be made to the ASK. MAJ Derek McClain will be continuing this research, and attempting to identify standardized data models and database formats that will facilitate communication and speed analysis across USASOC.

D.   SUGGESTIONS FOR FURTHER STUDY

As the problems addressed in this research are corrected and the ASK continues to evolve, the program should be evaluated again to examine new and improved features. TAM is an extremely effective tool for this type of ongoing evaluation. Future evaluations and scores can be conducted, and system evolution can be contrasted against this research as a baseline. IT is ever changing and evolving, and any lessons learned from this analysis require that further evaluation take place as the ASK goes through subsequent updates and improvements. Also, a user's beliefs and attitude towards an innovation are likely to change and evolve over time.[58] Therefore, it will be important to measure both initial acceptance, as well as continued acceptance of the system. New information technologies are continually being introduced to the community that could benefit from acceptance theory testing. Outside the realm of evaluating a new bit of software for the command, the ASK concept presents a plethora of IT management issues that could be studied and researched.

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[58] E. Karahanna, D. Straub, & N. Chervany, Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs, *MIS Quarterly*, 23(2) 1999, pp. 183-213.

E.   CONCLUSIONS

Design and use of advanced analytic technologies is paramount to enhancing the capabilities of USASOC Intelligence assets in the GWOT. To ensure these technologies are adopted and utilized to the fullest extent, the adopting units must manage user acceptance in the design, testing, fielding, and adoption. Motivated by the lack of previous research in this area, this study developed and empirically tested a model for explaining tactical-level users' acceptance of the Asymmetrical Software Kit. Overall, the model demonstrated a good fit with the data collected, and exhibited satisfactory explanatory power to the technology acceptance decisions observed among Tactical level users of the ASK.

The ASK was designed to enhance the analytic capabilities of the Special Operations Soldiers at the Tactical level of the GWOT. In light of the continuing fighting, and new and developing fronts in this "long war," effective adoption strategies for needed innovations are especially crucial. Complex innovations that are rapidly fielded during wartime need special attention paid to their implementation lest they wind up expensive trinkets locked in a safe and forgotten.

Intelligence analysis is an extremely complex series of tasks that have to be continuously coordinated. Recent advances in software have produced several tools that have excellent potential for application to the analysis and production process. The programs in the ASK have many tools and functions that make analysis easier and more effective for Intelligence professionals. To make full use of this concept, we must train ASK users together, to a common standard of interoperability, give them computers that are fast enough, and educate the Chain of Command to make use of the ASK a priority for Intelligence analysis at the Tactical level.

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APPENDIX A   IRB APPROVAL LETTER

Naval Postgraduate School
Institutional Review Board (IRB)

25-Oct-07

From: LT Brent Olde, Ph.D.
To: Assistant Professor Richard Bergin
          MAJ Peter H. Hopewell

Subject: YOUR PROJECT: ASSESSING THE ACCEPTANCE AND
          FUNCTIONAL VALUE OF THE ASYMMETRIC SOFTWARE KIT
          (ASK) AT THE TACTICAL LEVEL

1.   The NPS IRB is pleased to inform you that the NPS Institutional Review
     Board has approved your project (NPS IRB# NPS20070097-IR-EP7-A).

2.   The NPS IRB was originally certified by BUMED on 26 July 2002 and
     has been re-certified until 30 November 2007.

3.   This approval is valid for one year from this date. Please submit a copy of
     all records and consent forms to the Research and Sponsored Programs
     Office (Laura Ann Ikner-Price, Halligan Hall, Room 201B) at the
     conclusion of this project.

4.   If your protocol changes at any time, you will need to resubmit your
     project proposal to the NPS IRB.

Sincerely,

Lt Brent Olde, Ph.D.
Chair
NPS Institutional Review Board

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APPENDIX B SURVEY QUESTIONS

1. Introduction

Naval Postgraduate School
Informed Consent Statement

Introduction: You are invited to participate in a study entitled "Assessing the acceptance and functional value of the Asymmetric Software Kit (ASK) at the tactical level" being conducted by the Department of Defense Analysis.

Procedures: Please be frank and honest about your experiences with the ASK. This survey should take about 30 minutes of your time. It is completely anonymous, and no identifying data will be stored with your response.

Risks and Benefits: This project does not involve greater then minimal risk and involves no known reasonably foreseeable risks or hazards greater than those encountered in everyday life. Benefits of the survey include a better understanding by the researcher of opinions and attitudes within the tactical level SOF community regarding the Asymmetric Software Kit.

Compensation: There will be no tangible compensation provided for taking this survey. The results of the survey will be available from the USASOC G2 and in thesis form from the Naval Postgraduate School.

Confidentiality & Privacy Act: All records of this study will be kept private. No information will be publicly accessible which could identify participants. This survey will be identified only as a code number on all research forms/data bases. Any records of participation will be maintained by for three years, after which they will be destroyed.

Voluntary Nature of the Study. Participation is strictly voluntary, if you agree to participate, you are free to withdraw at any time without prejudice.

Points of Contact. If there are any questions or comments regarding this project upon the completion of participation, contact the Principal Investigator, Richard Bergin, 831-656-3112, rdbergin@nps.edu, or researcher MAJ Peter H. Hopewell, 910-489-4517, phhopewe@nps.edu. Any other questions or concerns may be addressed to the IRB Chair, LT Brent Olde, 656-3807, baolde@nps.edu.

Statement of Consent. I have been provided with a full explanation of the purpose, procedures, and duration of participation in this research project. I understand how my identification will be safeguarded and agree to participate in this study. I understand that by agreeing to participate in this research I do not waive any of my legal rights. This survey is anonymous and does not require any identifying personal data. Clicking the NEXT button below is your consent.

2. Demographic Information

1. Gender

☐ Male
☐ Female

2. MOS

☐ 18F
☐ 180A
☐ 35D
☐ 96B
☐ 96D
☐ 98C
☐ 98G
☐ 351B
☐ Other (please specify)
[   ]

3. Rank

○ Junior Enlisted E1-E4   ○ E5   ○ E6   ○ E7   ○ E8   ○ WO1   ○ CW2   ○ CW3   ○ CW4   ○ O1   ○ O2   ○ O3   ○ O4

4. Age

○ 18-22   ○ 23-25   ○ 26-30   ○ 31-35   ○ 36-40   ○ 40+

5. Time in Service

○ 0-2 years   ○ 3-5 years   ○ 6-8 years   ○ 9-11 years   ○ 12-15 years   ○ 16-18 years   ○ 19+ years

6. Education

○ GED   ○ HS Diploma   ○ Some College   ○ Associate Degree   ○ BS/BA   ○ Postgraduate degree

7. Time/ Experience using ASK

○ 1-2 months   ○ 3-6 months   ○ 7-12 months   ○ 13-18 months   ○ 19-24 months   ○ 2+ years

8. Type of ASK training you received

○ New Equipment Fielding/ Mobile Training Team   ○ 18F SFISC   ○ On the Job Training (OJT)   ○ None

○ Other (please specify)

[   ]

9. Current general computer usage

	Never	About once a month	About once a week	About once or twice a day	Three to five times a day	More than five times a day
Personal	○	○	○	○	○	○
Work	○	○	○	○	○	○

10. Current ASK Component Use

	Never	About once a month	About once a week	About once or twice a day	Three to five times a day	More than five times a day
Orion Magic	○	○	○	○	○	○
ArcGIS	○	○	○	○	○	○
Analyst's Notebook	○	○	○	○	○	○

3. Technology Acceptance Modeling Survey

11. This survey is conducted using a 7-point Likert scale to state how much you agree or disagree with a statement. Please read each question carefully (some are negatives) and reply accordingly. Please evaluate the following statement for practice:

The summer humidity in Fayetteville, NC doesn't bother me at all.

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The summer humidity in Fayetteville, NC doesn't bother me at all.	◯	◯	◯	◯	◯	◯	◯	◯

Comment:
[   ]

12. Using the ASK would improve my job performance

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK would improve my job performance	◯	◯	◯	◯	◯	◯	◯	◯

Comments:
[   ]

13. I could easily use any of the functions in the ASK on my own

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I could easily use any of the functions in the ASK on my own	◯	◯	◯	◯	◯	◯	◯	◯

Comment:
[   ]

14. It is frustrating to use the ASK because the computer I have access to is NOT fast enough

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
It is frustrating to use the ASK because the computer I have access to is NOT fast enough	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

15. ASK's interfaces make it easy for me to remember how to perform various kinds tasks

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
ASK's interfaces make it easy for me to remember how to perform various kinds tasks	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

16. Availability of computers for accessing the ASK is going to be a problem

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Availability of computers for accessing the ASK is going to be a problem	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

17. My supervisor thinks I should NOT use the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
My supervisor thinks I should NOT use the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

18. I do NOT feel comfortable using the ASK on my own

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I do NOT feel comfortable using the ASK on my own	○	○	○	○	○	○	○	○

Comment:

19. Whenever possible, I would use the ASK for my job tasks

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Whenever possible, I would use the ASK for my job tasks	○	○	○	○	○	○	○	○

Comment:

20. There are no barriers to my using the ASK for my job tasks

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
There are no barriers to my using the ASK for my job tasks	○	○	○	○	○	○	○	○

Comment:

21. ASK addresses my job related needs

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
ASK addresses my job related needs	○	○	○	○	○	○	○	○

Comment:

22. People who use the ASK do NOT tend to get recognized by their Chain of Command

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
People who use the ASK do NOT tend to get recognized by their Chain of Command	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

23. I would have no difficulty explaining why my use of the ASK may (or may not) improve my job performance

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I would have no difficulty explaining why my use of the ASK may (or may not) improve my job performance	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

24. ASK allows me to accomplish more work than would be otherwise possible

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
ASK allows me to accomplish more work than would be otherwise possible	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

25. It would be undesirable for ASK to link to the relevant external databases (e.g. those in other intelligence agencies or other service intel components)

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
It would be undesirable for ASK to link to the relevant external databases (e.g. those in other intelligence agencies or other service intel components)	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

26. Using ASK would be incompatible with the way I work

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using ASK would be incompatible with the way I work	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

27. The various functions of the ASK programs (Orion Magic, Analyst's Notebook, and ArcGIS) are easily accessible

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The various functions of the ASK programs (Orion Magic, Analyst's Notebook, and ArcGIS) are easily accessible	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

28. Using the ASK saves time

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK saves time	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

29. My colleagues (fellow Analysts/18F's) do NOT think I should use the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
My colleagues (fellow Analysts/18F's) do NOT think I should use the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

30. I believe I could communicate to others the benefit of using the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I believe I could communicate to others the benefit of using the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

31. ASK does NOT address the critical aspects of my job

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
ASK does NOT address the critical aspects of my job	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

32. I would use ASK more if I knew my boss wanted me to

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I would use ASK more if I knew my boss wanted me to	○	○	○	○	○	○	○	○

Comment:

33. The computer I have is slow and makes using the ASK difficult

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The computer I have is slow and makes using the ASK difficult	○	○	○	○	○	○	○	○

Comment:

34. When I have access to ASK, I would use it as often as needed

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
When I have access to ASK, I would use it as often as needed	○	○	○	○	○	○	○	○

Comment:

35. Accessing relevant Intelligence databases through the ASK is NOT important

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Accessing relevant Intelligence databases through the ASK is NOT important	○	○	○	○	○	○	○	○

Comment:

36. Using ASK would NOT make it easier to do my job

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using ASK would NOT make it easier to do my job	○	○	○	○	○	○	○	○

Comment:

37. I would be able to use the ASK effectively even if there is no one around to show me how to do it

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I would be able to use the ASK effectively even if there is no one around to show me how to do it	○	○	○	○	○	○	○	○

Comment:

38. In my job, using the ASK is important

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
In my job, using the ASK is important	○	○	○	○	○	○	○	○

Comment:

39. The quality of the products I am able produce with the ASK is high

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The quality of the products I am able produce with the ASK is high	○	○	○	○	○	○	○	○

Comment:

40. I have difficulty finding a computer to use ASK when I need it

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I have difficulty finding a computer to use ASK when I need it	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

41. It would be easy for me to become skillful in using the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
It would be easy for me to become skillful in using the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

42. It is easy for me to find the information and commands I need on the ASK screens

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
It is easy for me to find the information and commands I need on the ASK screens	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

43. Interacting with the ASK does NOT require a lot of mental effort

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Interacting with the ASK does NOT require a lot of mental effort	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

44. The ASK constantly produces substandard Intel Products for my effort

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The ASK constantly produces substandard Intel Products for my effort	○	○	○	○	○	○	○	○

Comment:

45. ASK is rigid and inflexible to interact with

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
ASK is rigid and inflexible to interact with	○	○	○	○	○	○	○	○

Comment:

46. My interaction with the ASK is clear and understandable

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
My interaction with the ASK is clear and understandable	○	○	○	○	○	○	○	○

Comment:

47. I would be more inclined to use the ASK if my co workers (other Analysts or 18F's) were already using it

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I would be more inclined to use the ASK if my co workers (other Analysts or 18F's) were already using it	○	○	○	○	○	○	○	○

Comment:

48. Overall, it is a bad idea to use the ASK in my job

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Overall, it is a bad idea to use the ASK in my job	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

49. People who influence my work think I should use the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
People who influence my work think I should use the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

50. People who evaluate my job performance think I should NOT use the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
People who evaluate my job performance think I should NOT use the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

51. Overall, I find the ASK to be useful to my job

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Overall, I find the ASK to be useful to my job	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

52. I find the user interfaces in the ASK easy to learn

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I find the user interfaces in the ASK easy to learn	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

53. In my job, use of the ASK is relevant

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
In my job, use of the ASK is relevant	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

54. Using the ASK would fit into my work style

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK would fit into my work style	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

55. There are NOT enough computers/software/hardware for everyone to use ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
There are NOT enough computers/software/hardware for everyone to use ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

56. My immediate supervisor thinks I should NOT use the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
My immediate supervisor thinks I should NOT use the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

57. In general, I am NOT happy with the products produced with the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
In general, I am NOT happy with the products produced with the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

58. The people I work with think that I should use the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The people I work with think that I should use the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

59. The benefits of using the ASK are NOT apparent to me

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The benefits of using the ASK are NOT apparent to me	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

60. Using the ASK would enhance my effectiveness at work

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK would enhance my effectiveness at work	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

61. It is easy to navigate between the different search queries, output products, and function screens on the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
It is easy to navigate between the different search queries, output products, and function screens on the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

62. The ASK is incompatible with the way I work

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The ASK is incompatible with the way I work	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

63. The individuals with whom I work routinely think I should use the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The individuals with whom I work routinely think I should use the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

64. The ASK runs slowly on the computer I have access to because the machine it too old/ worn out

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The ASK runs slowly on the computer I have access to because the machine it too old/ worn out	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

65. If I need someone's help using the ASK, I can NOT easily get it

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
If I need someone's help using the ASK, I can NOT easily get it	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

66. I am NOT able to use the ASK in my job when I want to

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I am NOT able to use the ASK in my job when I want to	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

67. The ASK training sessions and tutorials that I received are NOT helpful

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The ASK training sessions and tutorials that I received are NOT helpful	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

71

68. I have received adequate training on the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I have received adequate training on the ASK	○	○	○	○	○	○	○	○

Comment:

69. Using the ASK would be unpleasant

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK would be unpleasant	○	○	○	○	○	○	○	○

Comment:

70. Using the ASK in my job would NOT increase my productivity

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK in my job would NOT increase my productivity	○	○	○	○	○	○	○	○

Comment:

71. Learning to operate the ASK would be easy for me

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Learning to operate the ASK would be easy for me	○	○	○	○	○	○	○	○

Comment:

72. I have no problem telling others about the satisfactory results of using the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I have no problem telling others about the satisfactory results of using the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

73. I have problems getting help when using the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I have problems getting help when using the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

74. The ASK allows me to accomplish more tasks quickly

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The ASK allows me to accomplish more tasks quickly	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

75. Using the ASK would NOT be beneficial to my work

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK would NOT be beneficial to my work	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

76. Linking the ASK to Databases resident in other Intel Agencies is desirable

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Linking the ASK to Databases resident in other Intel Agencies is desirable	○	○	○	○	○	○	○	○

Comment:

77. Linking ASK to Databases resident in other USASOC units is NOT important

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Linking ASK to Databases resident in other USASOC units is NOT important	○	○	○	○	○	○	○	○

Comment:

78. Overall, I find ASK easy to use

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Overall, I find ASK easy to use	○	○	○	○	○	○	○	○

Comment:

79. Given that I have access to ASK, I intend to use it to accomplish my duties as often as needed

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Given that I have access to ASK, I intend to use it to accomplish my duties as often as needed	○	○	○	○	○	○	○	○

Comment:

80. I find it easy to get the ASK to do what I want it to do

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I find it easy to get the ASK to do what I want it to do	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

81. There are NOT enough computers in my unit for me to use ASK when I need to

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
There are NOT enough computers in my unit for me to use ASK when I need to	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

82. Using the ASK reduces the time I spend completing my job-related tasks

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
Using the ASK reduces the time I spend completing my job-related tasks	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

83. I am NOT pleased with the quality of the Intel products I can generate with the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I am NOT pleased with the quality of the Intel products I can generate with the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

84. I feel comfortable with the level of in-house support available for my using the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I feel comfortable with the level of in-house support available for my using the ASK	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

85. I do NOT have access to the resources I would need to use the ASK successfully in my job

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I do NOT have access to the resources I would need to use the ASK successfully in my job	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

86. The computer I have access to has adequate processing power to run the ASK

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The computer I have access to has adequate processing power to run the ASK	○	○	○	○	○	○	○	○

Comment:

87. To the extent possible, I intend to use the ASK in my job

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
To the extent possible, I intend to use the ASK in my job	○	○	○	○	○	○	○	○

Comment:

88. The organization of information on the ASK screens is clear and intuitive

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The organization of information on the ASK screens is clear and intuitive	○	○	○	○	○	○	○	○

Comment:

89. I have the opportunities and knowledge I need to use the ASK in my job

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I have the opportunities and knowledge I need to use the ASK in my job	○	○	○	○	○	○	○	○

Comment:

90. The layout for the various ASK program screens (Orion Magic, Analyst's Notebook, and ArcGIS) are NOT clear and consistent

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
The layout for the various ASK program screens (Orion Magic, Analyst's Notebook, and ArcGIS) are NOT clear and consistent	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

91. I am NOT getting the training I need to be able to use the ASK effectively

	Strongly Agree with the statement	Agree with the statement	Slightly Agree with the statement	Neither Agree nor Disagree with the statement	Slightly Disagree with the statement	Disagree with the statement	Strongly Disagree with the statement	N/A
I am NOT getting the training I need to be able to use the ASK effectively	◯	◯	◯	◯	◯	◯	◯	◯

Comment:

92. What features of the ASK do you like the most? Why?

93. What features of the ASK do you like the least? Why?

94. What suggestions do you have for future improvements to the ASK concept?

Thank You very much for your time. If you have any questions about the project, or would like a copy of my thesis when it is complete, please contact me at phhopewe@nps.edu.

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